In The Claims:

Please cancel claims 3-15, 18-23, 37-38, 40-42, 45-47 and 55-62 without prejudice, amend claims 24-28, 31 and 35-36, and add new claims 63-75, so that the claims hereafter read as follows:

1. - 2. (Canceled)

3. - 15. (Canceled)

16. - 17. (Canceled)

18. - 23. (Canceled)

24. (Currently Amended) A ~~The~~ method ~~of claim 23~~ for assessing physiological function in an individual, comprising:

(a) placing a sensor on an individual, said sensor comprising a stimulator, a detector, and a flexible connector formed integral with and serving as a mechanical and electrical connection between said stimulator and said detector:

said stimulator being shaped to fit a first anatomical site and configured to generate a stimulus and apply said stimulus to stimulate a nerve at said first anatomical site;

said detector being shaped to fit a second anatomical site, said detector comprising a plurality of electrodes each configured to detect a response signal generated at said second anatomical site in response to said stimulus; and

said connector being configured to automatically position said detector substantially adjacent to said second anatomical site when said stimulator is placed substantially adjacent to said first anatomical site on the surface of an individual; and

(b) performing nerve conduction studies with at least one of said electrodes to assess physiological function in an individual;

wherein said nerve conduction studies comprises:

(c) processing the response signals detected by said electrodes;

(d) determining from said response signals processed in step (c) at least one electrode detecting a response signal characteristic of said second anatomical site; and

(e) performing said nerve conduction studies of step (b) with said at least one electrode selected in step (d).

25. (Currently Amended) The method of claim 24 ~~23~~ wherein said nerve conduction studies comprise measurement of an F-wave latency.

26. (Currently Amended) The method of claim 24 ~~23~~ wherein said nerve conduction studies comprise measurement of a motor latency.

27. (Currently Amended) The method of claim 24 ~~23~~ wherein said nerve conduction studies comprise measurement of a sensory latency.

28. (Currently Amended) The method of claim 24 ~~23~~ wherein said nerve conduction studies comprise measurement of a sensory amplitude.

29. (Previously Presented) The method of claim 24 wherein said processing comprises amplitude comparison between a plurality of response signals generated at said second anatomical site.

30. (Previously Presented) The method of claim 24 wherein said processing comprises frequency spectrum comparison between a plurality of response signals generated at said second anatomical site.

31. (Currently Amended) The method of claim 24 ~~23~~ wherein at least one response signal generated at said second anatomical site comprises peripheral evoked potentials.

32. (Original) The method of claim 29 wherein said amplitude comparison comprises maximal peak to peak amplitude.

33. (Previously Presented) The method of claim 30 wherein said frequency spectrum comparison comprises discrete Fourier transform analysis of said plurality of response signals generated at said second anatomical site and comparison of the spectral components of said plurality of response signals.

34. (Previously Presented) The method of claim 33 wherein selected electrodes comprise electrodes with more energy at low frequencies.

35. (Currently Amended) The method of claim 24 ~~23~~ wherein at least one signal generated at said second anatomical site comprises compound muscle action potential.

36. (Currently Amended) The method of claim 24 ~~23~~ wherein at least one signal generated at said second anatomical site is recorded over a motor point.

37. - 38. (Canceled)

39. (Canceled)

40. - 42. (Canceled)

43. - 44. (Canceled)

45. - 47. (Canceled)

48. (Previously Presented) A method for assessing physiological function in an individual, comprising:

(a) providing a sensor comprising:

a stimulator for generating a nerve stimulus, said stimulator being shaped to fit a first anatomical site whereby

application of said stimulus stimulates a nerve at said first anatomical site; and

a detector shaped to fit a second anatomical site, said detector comprising a plurality of electrodes each capable of detecting a signal generated at said second anatomical site in response to said stimulus applied at said first anatomical site; and

a flexible connector connecting said stimulator to said detector to form an integral structure;

said flexible connector being shaped to automatically position said detector substantially adjacent to said second anatomical site when said stimulator is placed substantially adjacent said first anatomical site on the surface of an individual;

(b) placing said sensor on an individual so that said stimulator is located at and fits said first anatomical site and said detector is located at and fits said second anatomical site; and

(c) performing nerve conduction studies with said sensor to assess physiological function in an individual, said studies comprising (1) causing said stimulator to generate a stimulus on said individual at said first anatomical site, (2) causing said electrodes of said detector to detect response signals generated at said second anatomical site in response to said stimulus applied at said first anatomical site, and (3) evaluating said response signals;

(d) processing the response signals generated at said second anatomical site and detected by said electrodes to select

at least one electrode detecting a response signal characteristic of said second anatomical site; and

(e) performing the nerve conduction studies specified in step (c) with the at least one electrode selected in step (d).

49. (Previously Presented) The method of claim 48 wherein said processing further comprises amplitude comparison between a plurality of response signals generated at said second anatomical site.

50. (Previously Presented) The method of claim 49 wherein said amplitude comparison comprises maximal peak to peak amplitude.

51. (Previously Presented) The method of claim 48 wherein said processing comprises frequency spectrum comparison between a plurality of response signals generated at said second anatomical site.

52. (Previously Presented) The method of claim 51 wherein said frequency spectrum comparison comprises discrete Fourier transform analysis of said plurality of response signals generated at said second anatomical site and comparison of the spectral components of said response signals.

53. (Previously Presented) The method of claim 52 wherein said at least one selected electrode comprises electrodes with more energy at low frequencies.

54. (Previously Presented) The method of claim 48 wherein each of said response signals generated at said second anatomical site comprises peripheral evoked potentials.

55. - 62. (Canceled)

63. (New) Apparatus for assessing physiological function in an individual, the apparatus comprising:

a sensor comprising:

a stimulator, a detector, and a flexible connector formed integral with and serving as a mechanical and electrical connection between said stimulator and said detector:

said stimulator being shaped to fit a first anatomical site and configured to generate a stimulus and apply said stimulus to stimulate a nerve at said first anatomical site;

said detector being shaped to fit a second anatomical site, said detector comprising a plurality of electrodes each configured to detect a response signal generated at said second anatomical site in response to said stimulus; and

said connector being configured to automatically position said detector substantially adjacent to said second anatomical site when said stimulator is placed substantially adjacent to said first anatomical site on the surface of an individual;

wherein the apparatus is configured to select, from the plurality of response signals detected at the plurality of

detector electrodes, at least one electrode detecting a response signal characteristic of said second anatomical site.

64. (New) Apparatus of claim 63 wherein said selecting comprises amplitude comparison between a plurality of response signals generated at said second anatomical site.

65. (New) Apparatus of claim 63 wherein said selecting comprises frequency spectrum comparison between a plurality of response signals generated at said second anatomical site.

66. (New) Apparatus of claim 64 wherein said amplitude comparison comprises maximal peak to peak amplitude.

67. (New) Apparatus of claim 65 wherein said frequency spectrum comparison comprises discrete Fourier transform analysis of said plurality of response signals generated at said second anatomical site and comparison of the spectral components of said plurality of response signals.

68. (New) Apparatus of claim 67 wherein selected electrodes comprise electrodes with more energy at low frequencies.

69. (New) Apparatus for assessing physiological function in an individual, comprising:

a sensor comprising:

a stimulator for generating a nerve stimulus, said stimulator being shaped to fit a first anatomical site whereby application of said stimulus stimulates a nerve at said first anatomical site; and

a detector shaped to fit a second anatomical site, said detector comprising a plurality of electrodes each capable of detecting a signal generated at said second anatomical site in response to said stimulus applied at said first anatomical site; and

a flexible connector connecting said stimulator to said detector to form an integral structure;

said flexible connector being shaped to automatically position said detector substantially adjacent to said second anatomical site when said stimulator is placed substantially adjacent said first anatomical site on the surface of an individual;

wherein the apparatus is configured to determine, from the response signals generated at said second anatomical site and detected by said electrodes, at least one electrode detecting a response signal characteristic of said second anatomical site.

70. (New) Apparatus of claim 69 wherein said determining further comprises amplitude comparison between a plurality of response signals generated at said second anatomical site.

71. (New) Apparatus of claim 70 wherein said amplitude comparison comprises maximal peak to peak amplitude.

72. (New) Apparatus of claim 69 wherein said determining comprises frequency spectrum comparison between a plurality of response signals generated at said second anatomical site.

73. (New) Apparatus of claim 72 wherein said frequency spectrum comparison comprises discrete Fourier transform analysis of said plurality of response signals generated at said second anatomical site and comparison of the spectral components of said response signals.

74. (New) Apparatus of claim 73 wherein said at least one selected electrode comprises electrodes with more energy at low frequencies.

75. (New) Apparatus of claim 69 wherein each of said response signals generated at said second anatomical site comprises peripheral evoked potentials.